



### PHOTO DIODE

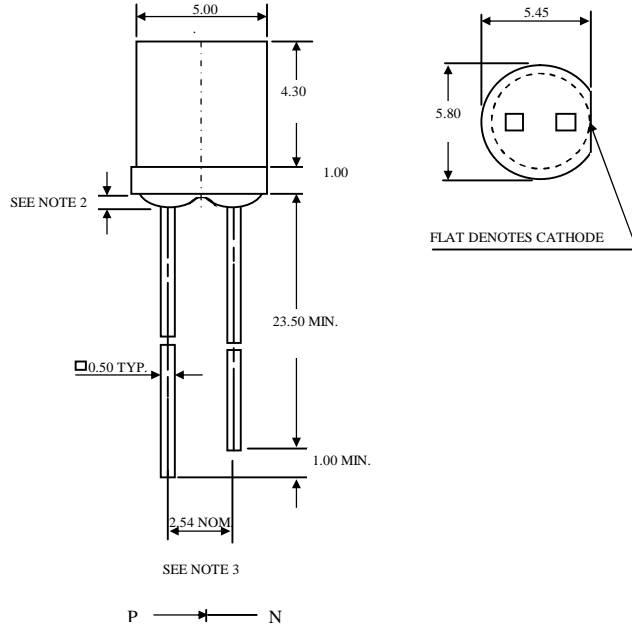
### PART NO. : CPD-86416

#### Description

The CPD-86146 is a high speed and high sensitive PIN photodiode in a water clear plastic package  
 Due to its water clear epoxy the device is sensitive to visible and infrared radiation

#### Package Dimensions

Unit: mm



#### Features

- 1 High photo sensitivity
- 1 Low junction capacitance
- 1 High cut-off frequency
- 1 Fast switching time
- 1 Acceptance viwe angle : 130

#### Notes :

1. Tolerance is " 0.25 mm unless otherwise noted.
2. Protruded resin under flange is 1.0 mm max.
3. Lead spacing is measured where the leads emerge from the package.

#### Absolute Maximum Ratings

@ T<sub>A</sub>=25°C

Parameter	Maximum Rating	Unit
Power Dissipation	150	mW
Operating Temperature Range	-25°C to +85 °C	
Storage Temperature Range	-40°C to +100°C	
Lead Soldering Temperature	260°C for 5 seconds	



**Optical-Electrical Characteristics**

@ T<sub>A</sub>=25°C

Parameter	Test Conditions	Symbol	Min.	Type .	Max.	Unit
Reverse Break Down Voltage	I <sub>R</sub> =100 μA Ee=0	V <sub>(BR)R</sub>	30	---	---	V
Reverse Dark Current	V <sub>R</sub> =10V Ee=0	I <sub>D</sub>	---	---	30	nA
Open Circuit Voltage	p=940nm Ee=1 mW/cm <sup>2</sup>	V <sub>OC</sub>	---	350	---	mV
Rise Time	V <sub>R</sub> =10V, λ=940nm	T <sub>r</sub>	---	30	---	nsec
Fall Time	R <sub>L</sub> =1K	T <sub>f</sub>	---	30	---	
Light Current	V <sub>R</sub> =5V, λ=940nm Ee=0.1mW/cm <sup>2</sup>	I <sub>L</sub>	---	1.5	---	μA
Total Capacitance	V <sub>R</sub> =3V, f=1MHz Ee=0	C <sub>T</sub>	---	25	---	pF

**Typical Optical-Electrical Characteristic Curves**

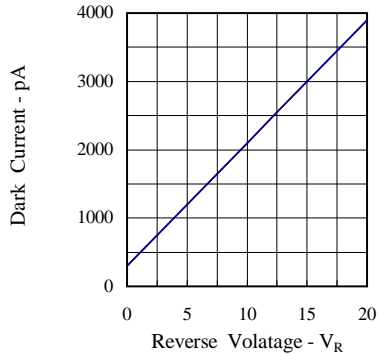


FIG.1 DARK CURRENT VS REVERSE VOLTAGE  
T<sub>A</sub>=25°C, Ee=0 mW/cm<sup>2</sup>

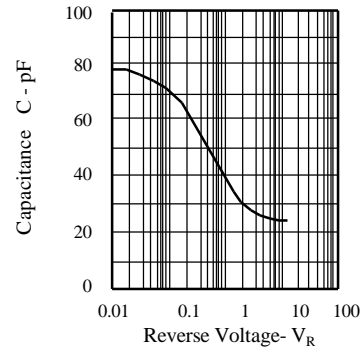


FIG.2 CAPACITANCE VS. REVERSE VOLTAGE  
F=1MHz, Ee=0mW/cm<sup>2</sup>

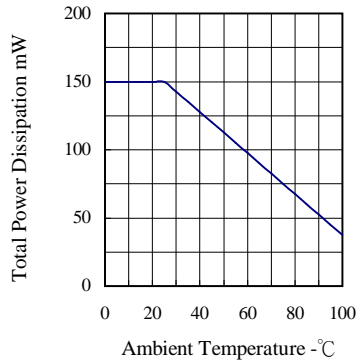


FIG.3 TOTAL POWER DISSIPATION VS. AMBIENT TEMPERATURE

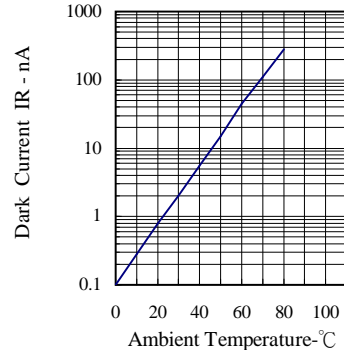


FIG.4 DARK CURRENT VS AMBIENT TEMPERATURE  
V<sub>R</sub>=10, Ee=0 mw/cm<sup>2</sup>



### Typical Optical-Electrical Characteristic Curves

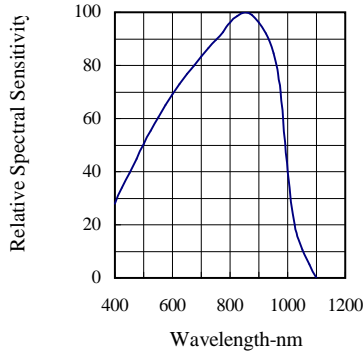


FIG.5 RELATIVE SPECTRAL SENSITIVITY VS. WAVELENGTH

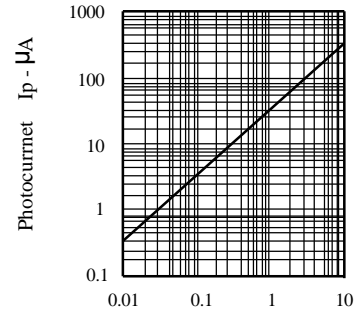


FIG.6 PHOTOCURRENT VS. IRRADIANCE = 940 nm

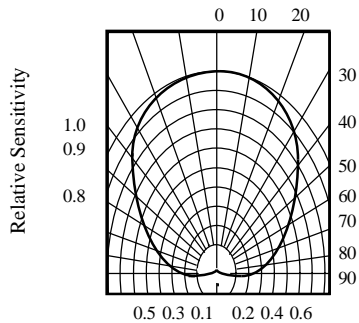


FIG.7 SENSITIVITY DIAGRAM



### Reliability test items and test conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD (group of permitted defect rate): 10%

No.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Ac/Re	Reference Standard
1	REFLOW Soldering	Temp. : 260 ±5	5secs	22PCS	0/1	JEITA ED-4701 300 302
2	Temperature Cycle	H : +100 15min ~ 5 min L : -40 15min	100Cycles	22PCS	0/1	JEITA ED-4701 100 305
3	Thermal Shock	H : +100 5min ~ 10 sec L : -10 5min	100Cycles	22PCS	0/1	MIL-STD-202G
4	High Temperature Storage	Temp. : 100	1000Hrs	22PCS	0/1	JEITA ED-4701 200 201
5	Low Temperature Storage	Temp. : -40	1000Hrs	22PCS	0/1	JEITA ED-4701 200 202
6	DC Operating Life	IF = 50 mA	1000Hrs	22PCS	0/1	Tested with CGX standard
7	High Temperature/ High Humidity	85 /RH85%	1000Hrs	22PCS	0/1	JEITA ED-4701 100 103

Notes : Failure Judgement Criteria : IR U×2 Ie L×0.8 VF U×1.2

U : Upper Specification Limit L : Lower Specification Limit